DOCUMENT RESUME

ED 246 067 TM 840 336

AUTHOR Oxman, Wendy G.; Barell, John
TITLE Reflective Thinking in Schools: A Survey of Teacher Perceptions.
PUB DATE Apr 83
NOTE 30p.; Paper presented at the Annual Meeting of the American Educational Research Association (67th, Montreal, Canada, April 11-15, 1983).
PUB TYPE Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Attitude Measures; College Preparation; Creative Thinking; Educational Objectives; High Schools; Logical Thinking; Secondary School Teachers; *Teacher Attitudes; *Urban Schools
IDENTIFIERS Montclair State College NJ; Project THISTLE; *Reflective Thinking

ABSTRACT

Project THISTLE: Thinking Skills in Teaching and Learning was designed to improve both the reflective thinking capabilities of urban high school students and their pre-college preparation. This study was conducted to elicit teacher perceptions of factors inhibiting reflective thinking in schools. Most important among the perceived constraints on reflective thinking in schools were student lack of prior experience; curricular pressures; and lack of stress on reflective thinking in statements of school philosophy, teacher education programs, and the curriculum. Urban, as compared with suburban, teachers reported less stress on reflective thinking in statements of school philosophy, less teacher autonomy, and lower levels of basic skills and background knowledge among both teachers and students. Teachers believe administrators value quiet and order over reflective thinking. The major factors identified in a factor analysis of teacher responses included teacher responsibility, student expectations, student readiness, curriculum, supervisor responsibility, and teacher insecurity. (Author/DWH)

REFLECTIVE THINKING IN SCHOOLS: A SURVEY OF TEACHER PERCEPTIONS

Wendy G. Oxman, Professor
Department of Educational Leadership
Montclair State College

John Barell, Associate Professor
Department of Curriculum and Teaching
Montclair State College

Paper presented at the annual conference of the
American Educational Research Association
Montreal, Canada

April, 1983

This study was conducted in conjunction with Project THISTLE: Thinking Skills in Teaching and Learning, a curriculum and staff development program designed to improve the pre-college preparation of urban high school students. The support of the Fund for New Jersey, the Victoria Foundation, the Jessie Smith Noyes Foundation, the New Jersey Department of Higher Education and Montclair State College are gratefully acknowledged.

Montclair State College
School of Professional Studies

Nicholas M. Michelli, Dean

Teacher perceptions of inhibitors of reflective thinking in schools were studied within context of Project THISTLE: Thinking Skills in Teaching and Learning, a curriculum and staff development program designed to improve the pre-college preparation of urban students. Most important among the perceived constraints on reflective thinking in schools were student lack of prior experience, curricular pressures such as the need to "cover content," and lack of stress on reflective thinking in statements of school philosophy, in teacher education programs and in the cirriculum. Urban, as compared with suburban teachers, reported less stress on reflective thinking in statements of school philosophy, less teacher autonomy, and lower levels of basic skills among students and background knowledge of both teachers and students.

REFLECTIVE THINKING IN SCHOOLS:
A SURVEY OF TEACHER PERCEPTIONS

Wendy G. Oxman, Professor
Montclair State College

John Barell, Associate Professor
Montclair State College

Among the goals of American education that most often appear on lists of overall aims and objectives, written statements of school philosophies, introductions to curriculum guides and teacher education course outlines is that of developing the ability of students to think reflectively--creatively, logically and critically. It may be assumed, therefore, that the importance of reflective thinking as an aim of education is part of the body of professional information known to teachers. Teachers *know* that reflective thinking is an explicitly stated educational goal. Behind classroom doors, however, there appears to be relatively little reflective thinking in evidence (Goodlad, 1983a,b). Why is there such a gap between stated aims and reality? Why is the knowledge that teachers have of the axiomatic importance of reflective thinking not utilized in day-to-day classroom instruction?

For the past three years, Montclair State College faculty and Newark teachers have been working toward challenging students to engage in creative, logical and critical thinking in high schools that had been characterized by an emphasis on minimum basic skills and rote learning of curriculum content. This work has been undertaken as part of Project THISTLE: Thinking Skills in Teaching and Learning, which was designed to improve the reflective thinking capabilities of urban high school students by working with their teachers in curriculum and staff development (see Appendix).

"Reflective thinking," for purposes of this study and as employed in Project THISTLE, refers to mental processes that go beyond memorization and require intellectually active consideration of facts, concepts and ideas. Reflective thinking includes logical reasoning, imaginative, creative mental processes, and critical analysis and judgment. Thus, Arendt's (1977) notion of imagination as fundamental to thinking (making present that which is absent) as well as Einstein's (1955) perception that for him a "combinatory play" with ideas preceded the more systematic aspects of critical thinking, Dewey's (1933) description of problem solving and Black's (1946) description of the processes of induction and deduction serve well as outlines of reflective thinking processes.

Project THISTLE provided the context for the development of this study. As teachers began implementing the techniques developed through their experience in Project THISTLE, they found the change difficult and the resulting student resistance disturbing, despite the fact that it had been anticipated. As part of a collaborative effort to understand some of the sources of that resistance, this research study was designed to elicit, systematically, teacher perceptions of factors inhibiting reflective thinking in schools.

The importance of teacher perceptions has been emphasized recently in a series of studies on teacher planning and teacher thinking reviewed by Clark (1983). What teachers believe to be the important goals of the school and the approved means of attaining these goals determine the curricular planning and instructional decisions they make and, therefore, the emphasis given to various aspects of students' educational experiences. Teachers' perceptions of the extent of their professional decision-making responsibilities and the perceived constraints on their decisions are an integral part of the teachers' planning and use of available resources to foster particular educational goals, including that of reflective thinking.

Teachers' perceptions of inhibitors of reflective thinking, of course, do not necessarily coincide with the real boundaries of and constraints on the exercise of teachers' decision-making power to foster reflective thinking and, in fact, may not do so in many or most cases. However, these perceptions are in many ways more important than the realities, since they determine what actually occurs in the classroom behind those "closed doors."

Therefore, answers to the following questions were sought: (a) To what factors do teachers attribute lack of reflective thinking in schools? (b) What inhibitors of reflective thinking are perceived as most important? (c) What differences are there among various teacher groups in perceptions of inhibitors of reflective thinking?

Methodology

A total of 160 veteran teachers, enrolled in graduate classes in research and curriculum at Montclair State College, responded to the reflective thinking survey questionnaire. Respondents were presented with a definition

of reflective thinking as combining imaginative and logical processes. They were asked, first, whether or not they agreed that reflective thinking is important and that there are many factors inhibiting this kind of thinking in classrooms. Those who did not agree were to provide only background information; however, all potential respondents agreed with the initial statement and completed the survey instrument.

Respondents gave their perceptions in terms of the extent to which each statement represented an inhibitor of reflective thinking in schools, using a four-point Likert-type scale. Teachers' ratings of strongly agree, agree, disagree or strongly disagree were converted to a 4-1 numerical scale. In addition, each respondent indicated those five statements which, in his/her opinion, were considered to be "most critical" as inhibitors of reflective thinking, and provided some background information to be used for subgroup comparisons.

Means and standard deviations of, and intercorrelations among, the 69 response ratings were obtained. The ratings were subjected to factor analysis (principal components analysis, with varimax rotation) to determine the dimensions of teachers' perceptions with regard to inhibitors of reflective thinking. Teachers' responses regarding those inhibitors deemed "most critical" were also tabulated.

A preliminary analysis revealed that teachers responded somewhat differently to the requests to rate each item as an inhibitor of reflective thinking and to indicate the five most critical inhibitors of reflective thinking. Therefore, two methods were used to determine the relative degree of importance of each item as a perceived indicator of reflective thinking. First, the mean of the ratings assigned to each item was utilized as a relative

measure of "salience" of that item--that is, the extent to which teachers felt its influence in general. Second, the number of nominations of each item as one of the five "most critical" was used to indicate relative position, in terms of the teachers' judgments, as "most critical" inhibitors of reflective thinking. Those items with the highest mean ratings were judged as most salient, and those with the largest number of nominations were judged to be most critical.

Statistical comparisons of all the item ratings were made to determine differences in teacher perceptions according to experience, age, degree status, level of teaching, and type of community.

Results

This section presents the results of the factor analysis of the teachers' item responses, the two methods of determining the relative importance of the items as inhibitors of reflective thinking (most salient and most critical) and the series of subgroup analyses.

Factor Analysis

Teachers' ratings were subjected to a factor analysis (principal components, with varimax rotation). A total of six factors emerged from this analysis, with 90 percent of the items loading .40 or above on one factor. Of these, only two items loaded .40 or more on two factors. The six factors may be considered as representative of those dimensions of the school environment to which, to some degree, teachers attribute the absence of reflective thinking in classrooms. These factors, in order of proportion of explained variance, were labeled *Teacher Responsibility* (e.g. "teachers lack specific skills in questioning f reflective thinking"; "teachers do not perceive reflective thinking to be part of their role"); *Student Expectations* (e.g. "students expect that every question has a 'right answer'"; "students are afraid of being mocked or teased"); *Student Readiness* (e.g. "students lack background knowledge"; "students are absent too often"); *Curriculum* (e.g. "curriculum content is not conducive to reflective thinking"; "teachers feel a need to cover content"); *Supervisor Responsibility* (e.g. "teachers fear accountability"; "administrators and supervisors fear 'rocking the boat'"); and *Teacher Insecurity* (e.g. "students are impatient with the difficulty of thinking"; "teachers are uncomfortable with problems that have no obvious solution").

Only two items loaded highly on more than one factor: "Curriculum doesn't stress reflective thinking" loaded highly on both *Curriculum* and *Teacher Responsibility*; "teachers fear loss of control" loaded highly on both *Supervisor* and *Teacher Insecurity*.

Table 1 presents the results of the factor analysis of the teachers' ratings of each item as an inhibitor of reflective thinking. Each of the items with factor loadings of .40 or more is presented.

Table 1

Teacher Attributions Regarding Inhibitors of Reflective Thinking: Loadings Greater Than .40 on Varimax Rotated Factors

Statement Number	Statement	Factor Loading
	Factor 1. Teacher Responsibility	
52	Teachers lack interest in reflective thinking.	.69
41	Teachers lack specific skills in questioning for reflective thinking.	.62
39	Teachers do not perceive teaching reflective thinking to be part of their role.	.60
28	Teachers do not encourage students to listen to each other in discussions and respond directly.	.60
68	Teachers do not understand the nature of reflective thinking.	.59
63	Teachers usually use didactic (lecture) teaching strategies.	.55
8	Teachers lack discussion skills (listening, reflecting, probing, and redirecting).	.54
42	Teacher tests do not stress critical thinking.	.54
4	Curriculum doesn't stress reflective thinking.	.54
10	Teachers do not value "playing with ideas" in class discussions.	.53
26	Teachers lack imagination.	.53
43	Teachers are unwilling to alter plans during a lesson to stimulate reflective thinking.	.53
40	Students are not used to sharing ideas in discussion.	.52
65	Teachers provide insufficient time for thinking during the lesson.	.48
34	Curriculum doesn't stress use of imagination.	.48
49	Community doesn't value reflective thinking.	.41

(continued)

Table 1 (continued)

Statement Number	Statement	Factor Loading
	Factor 2. Student Expectations	
11	Students are afraid of being mocked or teased by classmates.	.66
37	Students expect that every problem has a known solution.	.65
29	Students are afraid of being incorrect.	.62
5	Students expect that each question has a "right answer."	.58
14	Students perceive the teacher as authority.	.40
55	Students expect to engage in activities and assignments calling for simple factual questions and answers.	.40
	Factor 3. Student Readiness	
23	Students lack needed background knowledge.	.65
25	Students are absent too often.	.65
66	Students are not "developmentally ready" for reflective thinking.	.60
44	Students lack imagination.	.58
70	Students lack interest in reflective thinking activities.	.55
15	Human beings, by nature, do not think reflectively.	.53
13	Teachers do not have the opportunity to share ideas with colleagues during school day.	.45
	Factor 4. Curriculum	
69	Curriculum stresses acquisition of specific facts, ideas, and concepts.	.65
64	Curriculum doesn't stress problem solving strategies and activities.	.61
62	Reflective thinking activities are not included in supervisor's observational rating forms.	.56
31	Teacher preparatory programs do not stress teaching reflective thinking.	.53

(continued)

Table 1 (continued)

Statement Number	Statement	Factor Loading
	Factor 4. Curriculum (continued)	
36	Teachers are not treated as reflective thinkers or problem solvers.	.52
9	Curriculum content is not conducive to critical thinking.	.51
6	Teachers feel a need to "cover" content.	.48
19	In-service programs do not stress teaching for reflective thinking.	.48
61	Teachers are not included in making decisions related to long-range planning of curriculum and instruction.	.47
56	Administrators value quiet and order.	.46
4	Curriculum doesn't stress reflective thinking.	.44
17	Reflective thinking has not been established and communicated as one of the school's goals.	.41
1	Students lack experience with reflective thinking in school.	.41
24	School philosophy doesn't stress reflective thinking.	.40
	Factor 5. Supervisor Responsibility	
27	Supervisors lack flexibility.	.69
20	Supervisors lack imagination.	.57
59	Teachers fear parental disapproval.	.57
12	Supervisors pressure teachers to "cover" content.	.56
16	Curriculum is too highly structured.	.55
18	Teachers fear "accountability."	.53
32	Students are afraid of teacher "put down."	.53
46	Teachers fear supervisor's disapproval.	.51
3	Administrators and supervisors fear "rocking the boat" (i.e. change).	.48

(continued)

Table 1 (continued)

Statement Number	Statement	Factor Loading
	Factor 5. Supervisor Responsibility (continued)	
38	Administrators and supervisors provide no support for reflective thinking activities.	.45
22	Teachers prefer to ask questions which have "right" answers.	.43
33	Teachers believe only certain students *can* think reflectively.	.41
48	Teachers fear loss of control.	.40
	Factor 6. Teacher Insecurity	
58	Students are apathetic.	.62
57	Teachers are uncomfortable with problems that have no obvious solution.	.56
48	Teachers fear loss of control.	.54
35	Teachers fear change.	.48
51	Students are impatient with the difficulty of thinking.	.47
21	Students perceive the textbook as authority.	.43

Perceived Importance of Inhibitors of Reflective Thinking

In this section the most important inhibitors of reflective thinking, according to teachers, are presented.

In Table 2, items with mean ratings of importance (salience) of 3.0 or more are presented, along with an indication of the factor with which they are associated. The most salient inhibitors of reflective thinking--that is, those inhibitors which are felt most keenly by teachers--relate most closely to the "curriculum" and to the expectations of students; all but two of the 14 most salient inhibitors relate to these factors.

The most salient inhibitors of reflective thinking were "students expect that each question has a 'right answer'," "administrators value quiet and order," "students lack experience with reflective thinking in schools," "teachers feel a need to cover content," and "teacher preparatory programs do not stress teaching reflective thinking."

Table 2

Teacher Attributions as Most Salient Inhibitors of Reflective Thinking
(N = 160)

Statement Number	Statement	Factor	Mean	SD
5	Students expect that each question has a "right answer."	Student Expectations	3.34	.62
56	Administrators value quiet and order.	Curriculum	3.27	.73
1	Students lack experience with reflective thinking in school.	Curriculum	3.25	.66
6	Teachers feel a need to "cover" content.	Curriculum	3.25	.63
31	Teacher preparatory programs do not stress teaching reflective thinking.	Curriculum	3.21	.68
69	Curriculum stresses acquisition of specific facts, ideas, and concepts.	Curriculum	3.18	.60
18	Teachers fear "accountability."	Supervisor Responsibility	3.16	.67
4	Curriculum doesn't stress reflective thinking.	Curriculum/ Teacher Responsibility	3.13	.69
29	Students are afraid of being incorrect.	Student Expectations	3.13	.64
17	Reflective thinking has not been established and communicated as one of the school's goals.	Curriculum	3.10	.71
37	Students expect that every problem has a known solution.	Student Expectations	3.10	.53
55	Students expect to engage in activities and assignments calling for simple factual questions and answers.	Student Expectations	3.10	.60
11	Students are afraid of being mocked or teased by classmates.	Student Expectations	3.05	.71
42	Teacher tests do not stress critical thinking.	Teacher Responsibility	3.05	.67

Table 3 presents those items most often reported as one of the five "most critical" inhibitors of reflective thinking. "Students lack experience with reflective thinking in school," "teachers feel a need to cover content," "curriculum doesn't stress reflective thinking," "teacher preparatory programs do not stress teaching reflective thinking," and "reflective thinking has not been established and communicated as one of the school's goals" were those items most often noted.

Table 3

Teacher Attributions as Most Critical Inhibitors of Reflective Thinking
(N = 160)

Statement Number	Statement	Factor	No. of Selections as Most Critical
1	Students lack experience with reflective thinking in school.	Curriculum	47
6	Teachers feel a need to "cover" content.	Curriculum	35
4	Curriculum doesn't stress reflective thinking.	Curriculum/ Teacher Responsibility	35
31	Teacher preparatory programs do not stress teaching reflective thinking.	Curriculum	33
17	Reflective thinking has not been established and communicated as one of the school's goals.	Curriculum	30
5	Students expect that each question has a "right answer."	Student Expectations	29
41	Teachers lack specific skills in questioning for reflective thinking.	Teacher Responsibility	27
3	Administrators and supervisors fear "rocking the boat" (i.e. change).	Supervisor Responsibility	26
56	Administrators value quiet and order.	Curriculum	25
69	Curriculum stresses acquisition of specific facts, ideas, and concepts.	Curriculum	25
8	Teachers lack discussion skills (listening, reflecting, probing, and redirecting).	Teacher Responsibility	25
11	Students are afraid of being mocked or teased by classmates.	Student Expectations	23
18	Teachers fear "accountability."	Supervisor Responsibility	22
51	Students are impatient with the difficulty of thinking.	Teacher Insecurity	21

Subgroup Comparisons

The only significant differences among subgroups of teachers studied were between teachers in schools they identified as either "urban" or "suburban." Urban teachers, as compared with suburban teachers, more often agreed that the lack of reflective thinking in schools was due to aspects of *Student Readiness* and to *Supervisor Responsibility*. These results are presented in Table 4.

Table 4

Comparisons of Urban vs. Suburban Teachers:
Teacher Perceptions of Inhibitors of Reflective Thinking

Statement Number	Statement	Factor	Urban Mean	Urban SD	Urban N	Suburban Mean	Suburban SD	Suburban N	t
3	Administrators and supervisors fear "rocking the boat" (i.e. change).	Supervisor Responsibility	3.20	.79	64	2.92	.85	96	2.13*
7	Students have poor skills in reading, writing, math.	Student Readiness	3.19	.70	64	2.65	.73	92	4.55***
12	Supervisors pressure teachers to "cover" content.	Supervisor Responsibility	3.16	.72	62	2.87	.71	95	2.44*
13	Teachers do not have the opportunity to share ideas with colleagues during school day.	Student Readiness	2.88	.82	64	2.58	.90	96	2.07*
14	Students perceive the teacher as authority.	Student Expectations	3.07	.54	62	2.85	.63	96	2.16*
23	Students lack needed background knowledge.	Student Readiness	3.00	.70	62	2.70	.75	92	2.53*
24	School philosophy doesn't stress reflective thinking.	Curriculum	3.03	.68	61	2.81	.69	93	1.99*
25	Students are absent too often.	Student Readiness	2.74	.82	62	2.25	.77	94	3.83***
60	Classes are too large.	Student Readiness	2.97	.78	63	2.72	.78	95	1.99*
61	Teachers are not included in making decisions related to long-range planning of curriculum and instruction.	Curriculum	3.03	.90	62	2.71	.79	94	2.32*
67	Teachers lack background knowledge in subject matter.	Teacher Insecurity	2.32	.66	63	2.02	.57	94	2.99**

* $p < .05$ ** $p < .01$ *** $p < .001$

Few of the items which revealed differences between urban and suburban teachers were those determined to be, overall, the most salient and/or most critical inhibitors of reflective thinking. In general, however, teachers were more likely to perceive a more hierarchical structure for decision-making within urban schools. Urban teachers perceived significantly less sharing among teachers and less teacher involvement in the schools' decision-making processes, more pressure to cover content by supervisors afraid to "rock the boat," and less stress on reflective thinking in the schools' philosophy than did suburban teachers. Also significantly more important as inhibitors of reflective thinking in schools to the urban teachers as compared with their colleagues in the suburbs were large classes, frequent student absence, student perceptions of teachers as authority, and lack of basic skills of students and background knowledge of both students and teachers.

Summary and Discussion

In summary, the data indicate that teachers mainly attribute to the curriculum (including the ethos and expectations of the school) and to its students the lack of reflective thinking in school.

Teachers believe that administrators value quiet and order (item 56) over reflective thinking, since the latter has not typically been established and communicated as a school goal (17). Fearing accountability themselves

as teachers (18) and believing that administrators and supervisors, too, fear "rocking the boat" (3), they respond to perceived supervisory pressure to cover content (6) and note that the curriculum, after all, doesn't stress reflective thinking (4). Teachers also feel unprepared for teaching reflective thinking, as it has not been emphasized in teacher preparatory programs (31) and they lack specific skills in questioning for reflective thinking (41), including the discussion skills of probing and redirecting questions (8).

Teachers, then, tend to stress those aspects of curriculum which deal with the acquisition of specific facts (69), and students expect to engage in activities, assignments and tests calling for simple factual questions and answers (55, 42). Thus, students typically lack "prior" experience with reflective thinking in school (1). Expecting each question to have one "right answer" (5) and every problem a known solution (37), they resist reflective thinking, expressing impatience with its difficulty (51) and hesitating to participate for fear of being incorrect (29) or of being mocked or teased by classmates (11).

In urban as compared with suburban schools, teachers felt significantly less stress on reflective thinking in the schools' philosophy and a more hierarchical decision-making structure, as well as lower levels of basic skills among students and background knowledge of both teachers and students.

There is a critical discrepancy between the broad stated goals of education and the processes used in its name, which are limited to a small range of objectives and techniques. The results of this study confirm the "irony" noted by Goodlad (1983a,b) that "every statement of goals for schooling ... is broad and comprehensive in its implications for classroom practice. Yet pedagogy and curricula are geared, it appears, to only a small

fraction of these goals" (Goodlad, 1983b, p. 470).

If reflective thinking is known to be important as an educational goal of our society, why do teachers report that it hasn't been established and communicated as a school goal? Why isn't reflective thinking stressed in the curriculum? in teacher preparation programs? It may well be that the most clearly apparent values of the school itself are indeed those of maintaining quiet and order and of the "illusion" of education in covering content and eliciting "right answers" from students. Teachers are bombarded with so many sets of contradictory expectations that it is no wonder they respond to the most immediate and persistent "messages" received from supervisors, colleagues and the students themselves, and not to those they "know" to be important goals of American education (Barell, 1983).

The tendency to delimit one's professional attention to a small range of objectives and processes is not limited to teachers. For instance, current, well-designed and highly regarded research on school effectiveness is typically delimited to a consideration of basic skills instruction and outcomes. While valuable in their application to correcting the most obvious defects in chaotic, mismanaged schools and classrooms, the principles derived from research on school effectiveness, applied to education in general, may have reinforced the application of conventional approaches to schooling. The criteria of minimum basic skills outcomes and task-boundedness in the context of basic skills instruction, *narrowly defined*, may, in many settings, contradict the intentions and processes of developing reflective thinking (Oxman, 1981).

However, school effectiveness research, in its emphasis on the importance of the leadership of the principal within the school, does rightly

lay upon the shoulders of this person the immediate responsibility for clarifying the goals of education and specifying practices consistent with these goals. It is most important that the school principal--and, in large, complex schools and systems, the grade leaders, department chairmen, curriculum coordinators and other supervisors--take the initiative in expanding the processes of education to meet its most important goals. Critical dialogue at the district, regional, state and national levels must focus, too, on the implications of embedded values and practices such as "covering content" and apprehensiveness over "rocking the boat."

American schools have not changed much since William Torrey Harris, superintendent of schools in St. Louis in 1874, identified these as primary goals of education: "punctuality, regularity, attention and silence" (Tyack, 1974). "Toeing the line" was and is the dominant practice in classrooms rather than activities which provide for pondering on the universe of alternatives and using a rich variety of approaches in the service of the most important educational goal of developing reflective thinking.

In some communities, the teaching of reflective thinking represents a controversial, radical threat. Students' inexperience with reflective thinking in school may actually be evidence of conscious or unconscious attempts by teachers, reflecting social pressures, to control the content of student thinking in order to perpetuate certain ideologies and power relationships (Anyon, 1981). Attempts to engage students in reflective thinking about alternative perspectives on ideas--e.g. outcomes to events, ways of perceiving and interpreting data--are avoided. Most immediately, teachers may believe that developing skills in reflective thinking might lead to students' questioning of authority; they fear, too, that they might lose their jobs

if a new generation of "hippie freethinkers" are nourished in the schools. Also, many teachers seem to interpret the "back to basics" movement as representing repressive forces against thinking in the schools.

It may be, also, that what we are witnessing is not so much a conscious attempt to reproduce, through the schools, societal values and means of production, as a generalized tendency in adults to control youth--in order to maintain power and discipline, rather than to liberate youth from the constraints of authoritarian, concrete thinking. In addition, adult expectations may be as much a matter of underestimating children's abilities as attempting to preserve our own adult status roles and desiring to control events (Barell, 1980).

These data may also support Hofstadter's (1962) chronicle of a major anti-intellectual emphasis in an American society that is consumed with the advancement of technological "know-how."

The development of technological skill seems to call for training rather than education--thinking only to retrieve information already known, not thinking to create knowledge not yet conceived. However, scientists know that scientific inquiry is a creative enterprise, using language and other symbolic processes that are imaginative and metaphoric at times, logical and critical at others, with the world of the unknown as its content. Teachers and students need to learn this.

The emphasis on technological skill is also reflected in an overreliance on instructional materials in classrooms. It seems to be widely assumed that the technology presumably employed in the development of these materials resulted in products that are better than the judgment of the teacher and are often "applied" as if they held absolute truth and inherent instructional

power as well. For many teachers, these materials represent both curriculum and instructional technique. The fanfare associated with the widescale introduction of computer technology in the schools reflects the belief that these technological products will "do the job"--that of *teaching* students school subjects--even better. Clearly, all teachers need to be involved in a reflective process of curriculum development, including the evaluation and selection of curriculum materials, so that they understand the uses and limitations of such materials and the need to set them within the context of *educational* goals, content, strategies, learning environments and evaluative processes. Without conscious attention to these elements, we cannot foster the development of reflective thinking over long periods of time.

There is a need to consider the influence of colleges and universities on reflective thinking--and the lack of it--in the schools (Oxman & Barell, 1982). The perception of teachers that their preparation programs do not stress reflective thinking is a serious matter, for college faculty should be less inhibited than their colleagues in schools by external political pressures, real or perceived. The content and methodology of teacher education programs--their goals, assumptions and practices--must be reviewed and reflective thinking emphasized throughout. The processes of teaching on the college level, in general, must also be reviewed and improved--in part, in order to inspire in students as future parents and teachers a deeper understanding of what education can and should be.

The current interest on college campuses (or at least in some state departments of higher education) in improving precollege preparation in the public elementary and high schools holds some promise for addressing the critical need suggested by this research and others.

Programs which involve college-school cooperative ventures, with a focus on reflective thinking, may be of great value. Project THISTLE: Thinking Skills in Teaching and Learning, through which this research originated, holds some promise of serving as an inter-institutional model for the development of a new emphasis on reflective thinking in schools (Oxman & Michelli, 1981, 1982; Barell, Oxman & Michelli, 1982).

Within Project THISTLE, further research has begun to ascertain perceptions regarding inhibitors of reflective thinking on the part of department chairs, district supervisors, superintendents, principals, students and parents. Critical dialogue will then be initiated to share these perceptions and their underlying conceptions and misconceptions of personnel roles, curriculum, students' developmental abilities, the nature of reflective thinking and the instructional process. This search for meaning through the shared interpretation of relevant language (Habermas, 1971), definitions, self interest and societal influences will, it is expected, help to free the participants from the constraints imposed by the unexamined embedded values governing so much of school life.

Suggestions for Further Research

Goodlad's finding that students "scarcely ever speculated on meanings, discussed alternative interpretations, or engaged in projects calling for collaborative effort" (Goodlad, 1983, p. 468) represents evidence that the lack of reflective thinking is not only in teachers' minds. This current, modest, descriptive research study of teachers' perceptions of inhibitors of reflective thinking is a small effort toward determining the antecedents of this situation. This study should also be seen as a small part of a

larger research effort (see Oxman & Barell, 1982) to raise such research questions as:

1. What aspects of schooling act as facilitators of reflective thinking in schools? in colleges?

2. What are the characteristics of schools and classrooms that are successful vs. unsuccessful in fostering reflective thinking?

3. What are the experiences and perceptions of graduates of schools that differ on this characteristic?

4. What are schools and classrooms like when engaged in a change process with regard to reflective thinking? What are the inhibitors and facilitators of such change? How do teacher and student roles change while attempting to foster reflective thinking? What organizational processes and elements facilitate and/or impede these role changes?

5. To what extent do teachers' perceptions--both accurate and inaccurate--of the ways and means by which school achievement will be measured influence their planning and teaching?

6. To what extent is reflective thinking actually measured by standardized measures of achievement? typical teacher-made tests? To what extent do actual testing practices influence the quantity and quality of reflective thinking in schools?

7. How can classroom interactions, assignments and activities be designed to help students think reflectively?

8. How are these "embedded values" which inhibit reflective thinking transmitted to teachers? What facilitates/constrains our freedom from these "embedded values" (organizationally, personally, socially)?

BIBLIOGRAPHY

Anyon, J. Social class and school knowledge. *Curriculum Inquiry*, 1981, 11 (1), 3-42.

Apple, M. The hidden curriculum and the nature of conflict. *Interchange*, 1971, 2 (4).

Arendt, H. Reflections - Thinking, Part II. *The New Yorker*, 1977, 28, 126.

Barell, J. *Playgrounds of our minds*. New York: Teachers College Press, 1980.

Barell, J. Reflections on critical thinking in secondary schools. *Educational Leadership*, 198? 40 (6), 45-49.

Barell, J., Oxman, W. & Michelli, N. M. *The effects of Project THISTLE: Thinking Skills in Teaching and Learning on students' readin. comprehension.* Paper presented at the annual conference of the N -heastern Educational Research Association, Ellenville, New York, October, 1982.

Black, M. *Critical thinking*. Englewood Cliffs, NJ: Prentice Hall, 1946.

Clark, C. *Research on teacher planning*. Paper presented at the annual meeting of the AACTE, Detroit, Michigan, February, 1983.

Dewey, J. *How we think*. Lexington, MA: D. C. Heath, 1933.

Einstein, A. Quoted in B. Ghiselin, *The creative process*. New York: New American Library, 1955.

Goodlad, J. I. *A place called school*. New York: McGraw Hill, 1983(a).

Goodlad, J. I. A study of schooling: some findings and hypotheses. *Phi Delta Kappan*, 1983(b), 64 (7), 465-470.

Habermas, J. *Knowledge and human interests*. Boston: Beacon Press, 1971.

Hofstadter, R. *Anti-intellectualism in American life*. New York: Alfred Knopf, 1962.

Oxman, W. G. *Thinking, basic skills and learning*. Upper Montclair, NJ: Montclair State College, May, 1981.

Oxman, W. & Barell, J. (Eds.). Liberal education in a back-to-basics world. *Montclair Education Review*, 1981-82, vol. 1-3.

Oxman, W. G. & Michelli, N. M. *Combining curriculum and staff development in Project THISTLE: A story of successful college/urban secondary school cooperation*. Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, California, April, 1981.

Oxman, W. & Michelli, N. M. *Establishing a cooperative college-urban secondary school program: Combining curriculum and staff development in Project THISTLE*. Upper Montclair, NJ: Montclair State College, November, 1982.

Tyack, D. *The one best system*. Cambridge, MA: Harvard University Press, 1974.

APPENDIX

Project THISTLE: Thinking Skills in Teaching and Learning

Project THISTLE: Thinking Skills in Teaching and Learning was designed to improve the basic skills of urban college bound high school students by working with their teachers in an integrated process of curriculum and staff development. The major emphasis of Project THISTLE is on the preparation of classroom teachers to strengthen creative and critical thinking abilities of their students, helping them to develop the interest, willingness and ability to engage in intellectually active, constructive and reflective encounters with ideas within the content areas.

Project THISTLE cuts across disciplines to focus on thinking as an essential, integral part of both subject area learning and basic skills development. Underlying Project THISTLE is the belief that thinking skills are critical in the basic skills of reading comprehension, analytic writing and mathematical reasoning. Thus, it was anticipated that improvement in thinking skills would be reflected in improvement in performance on traditional standardized tests of basic skills.

As an integrated curriculum and staff development program, Project THISTLE was planned to help high school classroom teachers in the various disciplines to develop curriculum--not new content outlines nor new lists of discrete suggestions, but more complete, more thoughtful, more consistent versions of their own curricular plans with particular attention to the development of students' thinking skills.

The basic structure of Project THISTLE involves the participating teachers in three "phases" of staff/curriculum development. The three

overlapping but sequential phases are: (a) graduate course work in curriculum development and basic skills instruction, (b) classroom implementation of refined curriculum plans, with college faculty and supervisory support, and (c) extensions depending upon individual personal and professional needs, strengths and preferences. Further information is available from the Project Office at Montclair State College, Upper Montclair, New Jersey 07043.